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FAUNISTIC NOTE

Notes on the systematic position and distribution of *Mycomya supernivea* (Diptera, Mycetophilidae) in Japan

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Abstract

Mycomya supernivea Nakamura and Saigusa, 2020 is a recently described large-sized cold-adapted fungus gnat species known from the island of Hokkaido and the northern part of Honshu in Japan. This study reports the species for the first time from Shikoku Island and the central part of Honshu, indicating that the species is more widely distributed throughout the Japanese islands. Additionally, the systematic position of *M. supernivae* within the genus *Mycomya* is discussed, and it is placed under the subgenus *Mycomya* s. str. within the species group *M. matrona*.

Keywords

First records, winter active, cold-adapted, Eastern Palearctic.

Mycomya Rondani is a diverse and widely distributed genus of Mycetophilidae (Diptera) with over 400 species (Bánki et al. 2023; Omad et al. 2017; Väisänen 1984, 1996, 2013a, b), from which 13 species occur in Japan (Sasakawa 2014; Nakamura and Saigusa 2020). A new, large-sized species (Fig. 1), *Mycomya supernivea* Nakamura and Saigusa, 2020 (Fig. 1), was recently described from Japan (Nakamura and Saigusa 2020). This species flies in November–December and is found both on the surface of the snow, from which it derives its name "*supernivea*" meaning "above the snow", and

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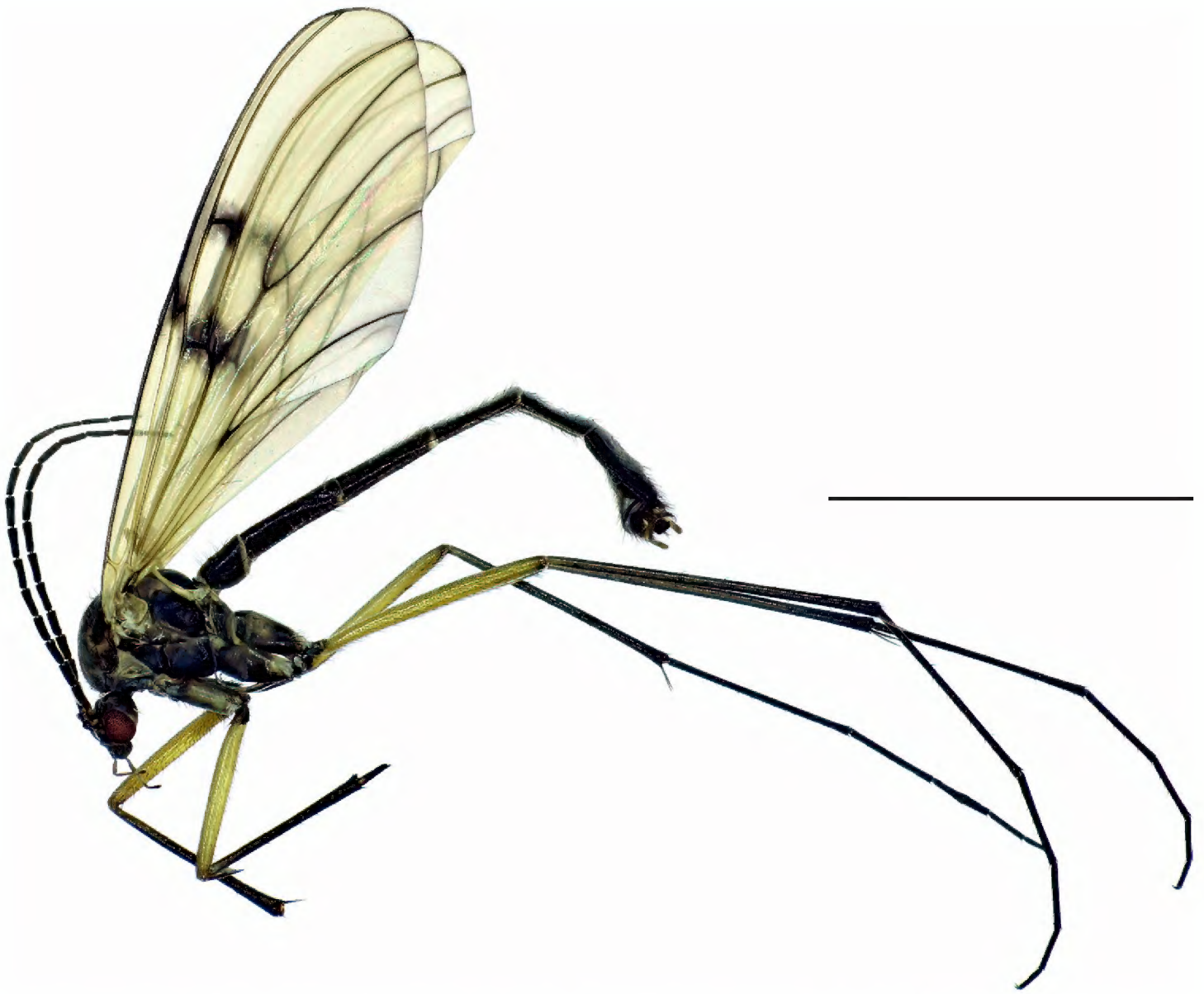

Figure 1. Habitus of male *Mycomya supernivea* Nakamura and Saigusa, 2020. Scale bar: 5 mm. Specimen: Japan, Shikoku, Mt. Kamegamori, 1700 m, 33.787126° N 133.18949° E.

in special pitfall traps. It is known from Hokkaido and the northern part of Honshu in Japan (Nakamura and Saigusa 2020).

The subgeneric placement of *Mycomya supernivea* was not addressed in the original species description by Nakamura and Saigusa (2020). However, based on the presence of distinct setose submedian appendages on the male sternal synsclerite, *M. supernivea* can be classified under the subgenus *Mycomya* s. str. (*sensu* Väisänen 1984). Nakamura and Saigusa (2020) compared *M. supernivea* with two North American species, *M. matrona* Väisänen, 1984 and *M. ata* Garrett, 1924. It is suggested that *M. supernivea* is closely related to *M. ata* based on the characteristics of the combs of bristles on the ventral side of tergite 9, and compared *M. supernivea* with *M. matrona* based only on wing size measurements. However, *M. matrona* and *M. supernivea* share more morphological similarities and can be considered to be more closely related to each other than to *M. ata* based on the followings:

- the sternal submedian appendages in *M. matrona* and *M. supernivae* are long with long setae; sternal submedian appendages are short with many strong spines on the medial side in *M. ata.*

- the gonostylus in *M. matrona* and *M. supernivae* is wide, with 7–11 short conical teeth-like bristles; it is narrow and has only two teeth-like bristles and one long seta in *M. ata*.
- both *M. matrona* (wing length 7.2–9.1 mm) and *M. supernivae* (wing length 8.7–10.7 mm) are large and dark species; *M. ata* is a smaller (wing length 5.7–7.0 mm) and paler species.

Therefore, based on the shared morphological characters, *Mycomya supernivae* should be considered a member of the *M. matrona* species group (*sensu* Väisänen 1984). *Mycomya supernivae* can be distinguished from *M. matrona* and *M. ata* by its marked wings and by unbranched gonostylus (the gonostylus branched in *M. matrona* and *M. ata*).

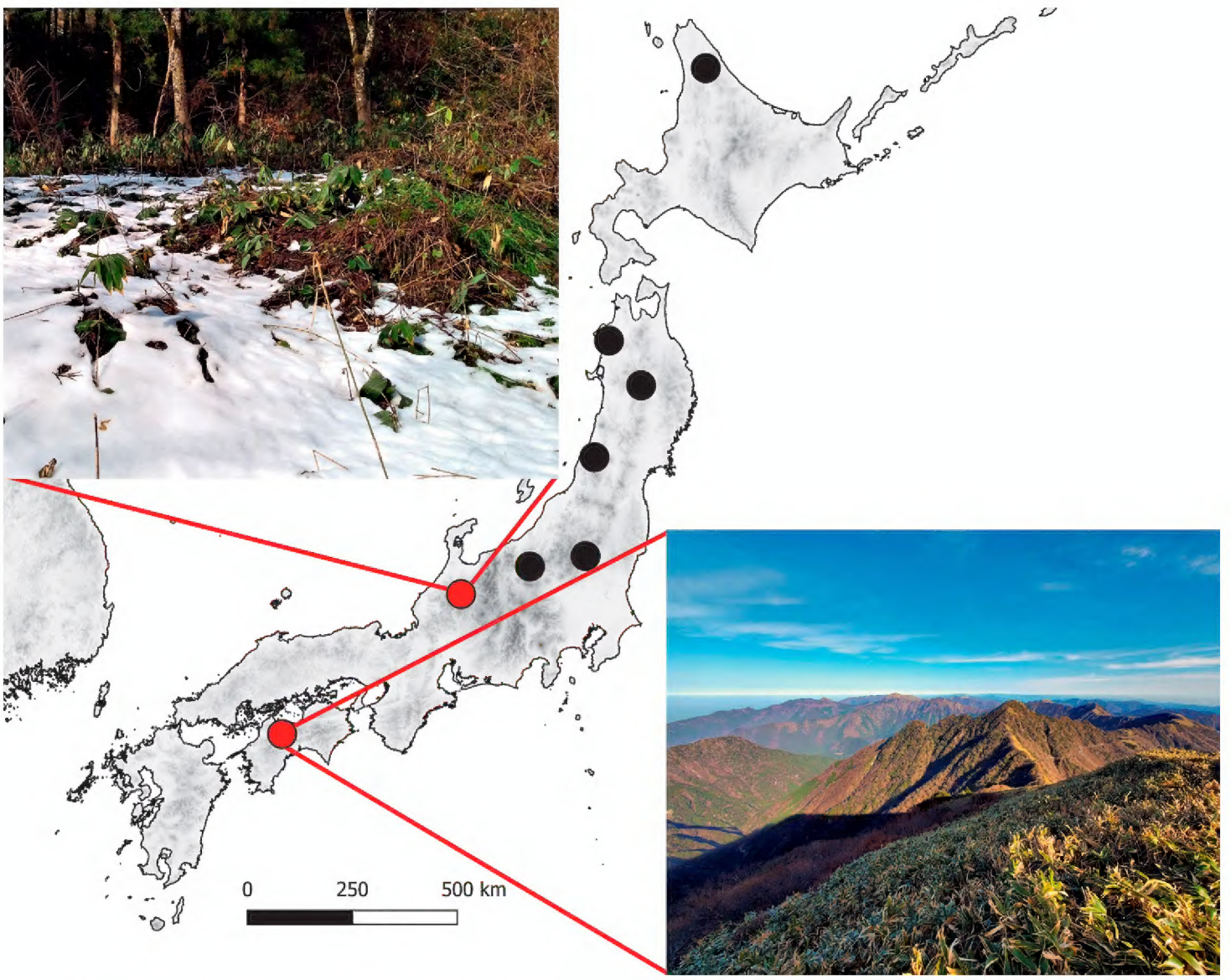

Figure 2. Occurrence data and habitat photos of *Mycomya supernivea* Nakamura and Saigusa, 2020. Red dots indicate locations of investigated specimens; black dots indicate approximate locations of literature data.

Mycomya (*Mycomya*) *supernivea* Nakamura and Saigusa, 2020

Material examined: Japan, Shikoku Island, Ehime/Kochi Pref., Mt. Kamegamori, 1700 m, 33.787126° N 133.18949° E, 27 November 2022, 1 male, L.-P. Kolcsár and S. Tongudom leg.; Japan, Honshu Island, Gifu Pref., Hida, near Odori Dam, 770 m, 36.24203° N 137.01882° E, 12 December 2019, 6 males and 3 females, L.-P. Kolcsár leg.

The studied specimens were hand-collected, stored in ethanol or pinned, and deposited in the author's private collection (CKLP). These are the first records of the species from Shikoku Island and from the central part of Honshu (Fig. 2).

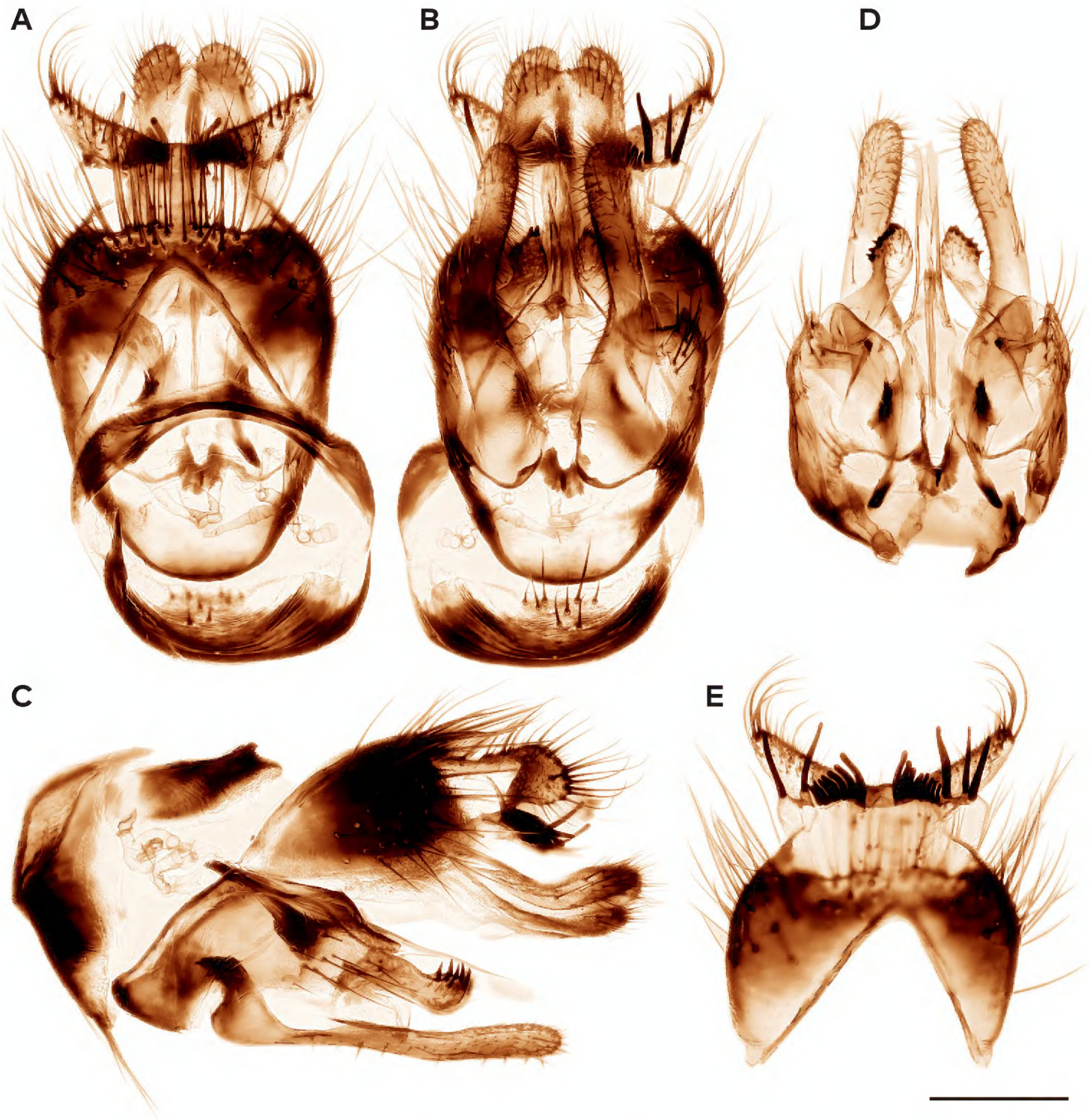

Figure 3. Male terminalia of *Mycomya supernivea* Nakamura and Saigusa, 2020. **A** tergal view, **B** sternal view, **C** lateral view, **D** terminalia after removing tergum 9, **E** tergum 9 sternal view. Scale 0.3 mm. Specimen: Japan, Shikoku, Mt. Kamegamori, 1700 m, 33.787126° N 133.18949° E.

The genital structures were analyzed using a Zeiss Stemi 508 stereomicroscope equipped with a Canon Kiss M digital camera. Layered photos were combined using Zerene Stacker software. Male specimen collected from Shikoku showed variation in the number of bristles on the ventral side of tergite 9 (epandrium), with 3 lateral bristles on the left side and 2 on right side of the comb (Fig. 3), but was otherwise morphologically identical to the typical form (see Nakamura and Saigusa 2020, figs. 6–8). The species is found flying short distances, with the female usually observed on the surface of snow, while the male is usually found resting on dry vegetation in Gifu Prefecture. In Shikoku, the species was collected at the tree line (1700 m), resting on broad-leaf bamboo (*Sasa* spp.). The discovery of the species in Central Honshu and Shikoku suggests that it is more widely distributed throughout Japan than previously thought.

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